Original Article

KNOWLEDGE AND PRACTICE OF HEALTH CARE PROVIDERS REGARDING SYNDROMIC MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS IN PRIMARY AND SECONDARY HEALTH CARE FACILITIES

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ABSTRACT

Introduction: Sexually transmitted infections (STIs) remain a global health concern, necessitating effective management to mitigate complications and transmission. This study focuses on the syndromic approach, employing clinical syndromes for STI diagnosis and treatment, particularly in the context of primary and secondary healthcare facilities in Bangladesh. This research aimed to assess the knowledge and practice of healthcare providers concerning the syndromic management of STIs in Bangladesh. Specific objectives included evaluating knowledge levels, current practices, healthcare facility services, and associated factors.

Methods: A cross-sectional study was conducted from January 2023 to December 2023 in Upazila Health Complexes and District Hospital of Noakhali District. Data were collected from 62 healthcare providers through face-to-face interviews, utilizing a pretested semi-structured questionnaire and the District STD Quality of Care Assessment (DISCA) tool. **Results:** The demographics of physicians showed varying levels of experience and educational backgrounds. While 59.7% were aware of the national guidelines for STI management, knowledge gaps were observed in specific treatment scenarios. For instance, 83.9% correctly acknowledged the treatment of urethral discharge for Gonorrhea, while only 24.2% accurately specified the complete regimen, encompassing the correct drug, dose, frequency, and duration. Assessing STI management practices, the study found that 54.8% of healthcare providers had encountered patients with STI symptoms. Among this group, 44.11% demonstrated correct adherence to treatment protocols, prescribing the accurate drug, dose, frequency, and duration. Notably, 64.5% of STI patients received counseling sessions on a regular basis. However, the study also revealed common obstacles, such as issues with patient non-compliance, privacy concerns, and social stigmas that affect the availability of STI treatment. Accessibility data regarding the services provided by healthcare facilities revealed that 88.9% of facilities reported challenges protecting privacy for patients.

Conclusion: Healthcare providers demonstrated varying levels of knowledge and practice in syndromic STI management. Identified gaps suggest a need for targeted training programs and interventions to enhance provider skills. The study underscores the importance of addressing systemic challenges in STI care provision, including privacy concerns and social stigmas, to improve overall healthcare outcomes.

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INTRODUCTION

Sexually transmitted infection is a global health problem of extraordinary dimensions. A collection of clinical syndromes that are primarily spread through sexual activity are referred to as sexually transmitted diseases (STDs), also known as sexually transmitted infections (STIs) (1). Common sexually transmitted infections (STIs) include chlamydia, gonorrhea,

syphilis, human papillomavirus infection (genital warts), trichomoniasis, chancroid, and genital herpes, hepatitis B, and HIV infections. Some pathogen types that cause these infections include bacteria, viruses, and parasites (2). According to the World Health Organization (WHO), sexually transmitted infections (STIs) pose a serious threat to public health, negatively affecting people's quality of life and potentially fatal (2).

Every day, over a million treatable sexually transmitted infections are identified as one of the top five reasons people travel to developing nations for medical care (3). According to WHO data gathered between 2009 and 2016, there were 376.4 million incident cases of STIs in the 15–49 age range; gonorrhea and chlamydia accounted for about half of these cases (3). There is a dearth of information on STIs in Bangladesh's general population. In the 12 months prior to the survey, 14% of women who have ever been married report having experienced a STI or its symptoms, according to the Bangladesh Demographic and Health Survey (BDHS) (4)

In a 2010 study, the prevalence of gonorrhea, syphilis, non-gonococcal urethritis, chancroid, genital herpes, and genital warts were found to be 29.58%, 12.68%, 41.58%, 4.93%,8.45%, and 2.82% among patients who visited the out-patient department of Dermatology at Dhaka Medical College. Males had a nearly four-fold higher prevalence. The age group of 25–34 years old had the greatest prevalence rate. (5)

In Dhaka, a cross-sectional study of slum dwellers revealed that 6% had syphilis infection, 3.8% had HBsAg, 1.7% had gonorrhea, and less than 1% had chlamydia. The risk of contracting syphilis or being an HBsAg carrier was more than twice higher in men than in women. Men were more likely than women to engage in behaviors that help spread STIs.(6)

Most patients with STIs are treated in primary and secondary healthcare facilities. Preventing and treating sexually transmitted infections (STIs) globally is achieved through the provision of combined health services. Preventive measures against STIs, which should include well-designed programs of health education, vaccine administration, and screening, are one of the fundamental requirements to raise the quality of health care in healthcare facilities. (7). Studies have shown that the traditional methods of diagnosing and treating sexually transmitted infections face difficulties related to scarce resources and delayed diagnosis. (8), and challenging access to medical care (9,10) Serious consequences like pelvic inflammatory disease, infertility, ectopic pregnancy, abortions, fetal loss, congenital infections, and cancer are linked to delays in treating the cases (8). Furthermore, if STI cases are not adequately treated, the risk of contracting HIV from HIV cases will rise, leading to a high prevalence of HIV cases and related complications (2).

The WHO advises using a syndromic approach to diagnose and treat sexually transmitted infections in order to reduce treatment delays. Primary and secondary health care physicians are the backbone of this kind of approach's implementation. Various studies carried out in developing nations, however, revealed that healthcare professionals had inadequate knowledge (11,12) and practice (13) regarding the syndromic management of sexually transmitted infections. As of yet, Bangladesh has not provided any data. Therefore, the current study demonstrated to primary and secondary healthcare providers the efficacy and clinical benefits of employing the syndromic approach to STIs for diagnosis and management.

METHODS

Study design, settings, and period

A cross sectional study was conducted to find out the state of knowledge and practice of health care providers regarding syndromic management of sexually transmitted infections in primary and secondary healthcare facilities.

The study was carried out at all primary and secondary healthcare facilities in Noakhali district, Bangladesh. The study was conducted for a period of 12 months from 1st January to 31st December, 2023.

Study subjects, sample size, and sampling

The study targeted registered doctors actively engaged in providing healthcare services within selected primary and secondary healthcare facilities who fulfilled the criteria of the study.

Healthcare providers working in primary and secondary health care facilities were selected by convenience sampling. Participants were selected following the inclusion criteria. Participants who did not fulfill the criteria were not included. Thus 62 respondents were recruited conveniently within the course of time of data collection.

Data collection

Data collection involved examining variables related to knowledge, practice, and service provision. Physicians' level of knowledge was assessed based on how accurately they answered the National Guideline's questions about drug prescription details (drug name, dosage, frequency, and duration) for each of the three STI syndromes (genital ulcer, vaginal discharge, and urethral discharge). Physician practice

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was evaluated based on the National Guideline's methodology for accurately reporting drug prescription details (name of drug, dose, frequency, and duration) for each of the three STI syndromes (genital ulcer, vaginal discharge, and urethral discharge) over the previous ten days, a pretested semi-structured questionnaire was used for this and the District STD Quality of Care Assessment (DISCA) tool (14) used for assess the service of healthcare facilities.

Data analysis

Statistical Package for the Social Sciences (SPSS) software for Windows version 25 (IBM Corp., Armonk, NY, USA) was used. Data entry and coding phases both underwent quality control procedures. Descriptive statistics were used to display the data, with means and standard deviations for quantitative variables and frequencies and percentages for qualitative variables. The statistical significance between participants' responses and their medical specialty, length of clinical practice, and acquisition of specialized training for managing STIs was recorded using the Fisher's exact test.

Ethical considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of the National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh. Informed written consent was taken from each participant before data collection. Privacy, confidentiality, and anonymity was maintained strictly.

RESULTS

Socio-Demographic characteristics

The table 1 summarizes demographic information for 62 respondents. Key findings include a diverse age distribution, a slight male majority, a majority with an MBBS degree, and most respondents lacking specific medical specialties. Professional experience varies, with the majority having 1-5 years. Only a minority received previous training in STI management.

Table 1. Socio-Demographic characteristics of the participants

Characteristics	Frequency (n=62)	Percent (%)
Age of the respondents		
Below 30 years	27	43.55
30-39 years	27	43.55
40-49 years	8	12.9
Gender		
Male	37	59.7
Female	25	40.3
Religion		
Islam	54	87.1
Hindu	8	12.9
Educational level		
MBBS	53	85.5
Post Graduate (FCPS/MD/MS etc.)	9	14.5
Medical specialty		
No medical specialty (MBBS)	53	85.6
Medicine	2	3.2
Gynecology & Obstetrics	3	4.8
Surgery	2	3.2
Skin & VD	2	3.2
Years of experience		
1-5 years	41	66.13
6-10 years	11	17.74
More than 10 years	10	16.13
Previous training on STI management	**Frequency (n=62)**	**Percent (%)**
Yes	11	17.7
No	51	82.3

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Knowledge regarding STIs

Table 2 presents an overview of respondents' knowledge regarding sexually transmitted infections (STIs) and their treatment guidelines. Regarding awareness of the National Guideline, 59.7% of respondents reported being aware, while 40.3% indicated no knowledge. However, responses varied when asked about specific STI treatments. In treating urethral discharge related to Gonorrhea, 59.7% correctly mentioned the drug, while 24.2% provided accurate details on drug, dose, frequency, and duration. However, 16.1% provided incorrect information regarding the treatment of muco-purulent vaginal discharge associated with Bacterial Vaginosis, 35.5% correctly mentioned the drug, while 17.7% provided comprehensive details. In contrast, 46.8% gave incorrect information. In the case of curd-like vaginal discharge related to Candidiasis, 48.39% correctly mentioned the drug, with 32.26% providing detailed information. However, 19.35% provided incorrect details. The table also highlights responses for the treatment of frothy greyish-white vaginal discharge (Trichomoniasis), painless single genital ulcer (Syphilis), painful multiple genital ulcer (Chancroid), and multiple genital ulcer with blisters (Genital Herpes). Varied percentages of respondents correctly mentioned drugs and treatment details, while some provided incorrect information. Concerning drugs contraindicated in pregnancy, a notable 80.6% correctly identified them, while 19.4% provided incorrect information. The findings underscore the diversity in knowledge levels regarding STI treatment among the respondents.

Table 2. Distribution of the participants by knowledge regarding STIs (n=62)

Characteristics	**Frequency**	**Percent**
Know about the National Guideline		
Yes	37	59.7
No	25	40.3
Knowledge of Syndromes	**Frequency (n=62)**	**Percent (%)**
Urethral discharge treatment (Gonorrhea)		
Correctly mentioned drug	37	59.7
Correctly mentioned drug, dose, frequency and duration	15	24.2
Incorrect	10	16.1
Muco-purulent vaginal discharge treatment (Bacterial Vaginosis)		
Correctly mentioned drug	22	35.5
Correctly mentioned drug, dose, frequency & duration	11	17.7
Incorrect	29	46.8
Curd-like vaginal discharge treatment (Candidiasis)		
Correctly mentioned drug	30	48.39
Correctly mentioned drug, dose, frequency & duration	20	32.26
Incorrect	12	19.35
Frothy greyish white vaginal discharge treatment (Trichomoniasis)		
Correctly mentioned drug	25	40.3
Correctly mentioned drug, dose, frequency & duration	22	35.5
Incorrect	15	24.2
Painless, single genital ulcer treatment (Syphilis)		
Correctly mentioned drug	18	29
Correctly mentioned drug, dose, frequency & duration	30	48.4
Painful, multiple genital ulcer treatment (Cancroid)		
Correctly mentioned drug	15	24.2
Correctly mentioned drug, dose, frequency & duration	25	40.3
Incorrect	22	35.5
Knowledge of Syndromes	**Frequency (n=62)**	**Percent (%)**
Multiple genital ulcer with blisters treatment (Genital Herpes)		
Correctly mentioned drug	30	48.4
Correctly mentioned drug ,dose, frequency and duration	7	11.3
Incorrect	25	40.3
Drugs contraindicated in pregnancy		
Correctly mentioned	50	80.6
Incorrect	12	19.4

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Practice regarding STIs

The provided table offers insights into the respondents' practices regarding sexually transmitted infections (STIs). Among the 62 respondents, 54.8% have encountered patients exhibiting symptoms like urethral discharge, vaginal discharge, or genital ulcers in the last 10 days.

For those who observed such symptoms (n=34), the majority witnessed urethral discharge (29.4%), vaginal discharge (64.7%), and genital ulcers (5.9%). Regarding prescription practices, 97.1% of respondents correctly prescribed drugs, while 2.9% made errors. However, variations exist in the prescription details, with correct doses at 61.8%, correct frequency at 76.5%, and correct duration at 64.7%. Notably, 44.11% of respondents adhered to correct practices in drug prescription, dose, frequency, and duration. The findings indicate a mix of accurate and varied practices among the respondents in managing STI symptoms.

Table 3. Distribution of the participants by practice on STIs (n=62)

Have seen patients with symptoms such as urethral discharge, vaginal discharge, or genital ulcers in the last 10 days		
Yes	34	54.8
No	28	45.2
Symptoms	**Frequency (n=34)**	**Percent (%)**
Urethral discharge	10	29.4
Vaginal discharge	22	64.7
Genital ulcer	2	5.9
Prescribed Drug		
Correct	33	97.1
Incorrect	1	2.9
Prescribed Dose		
Correct	21	61.8
Incorrect	13	38.2
Prescribed Frequency		
Correct	26	76.5
Incorrect	8	23.5
Prescribed Duration		
Correct	22	64.7
Incorrect	12	35.3
Correctly practiced drug, dose, frequency and durations	15 (n=34)	44.11

Table 4 highlights varied professional activities and barriers in managing sexually transmitted infections (STIs). Most respondents consistently provide counseling sessions, but documentation practices differ. Lab work before treatment is often requested (35.48%). Patient engagement in follow-up varies, and spouses' involvement in counseling is infrequent (43.5%). A majority (61.3%) faced barriers during STI treatment. The findings underscore the need for consistent practices and addressing challenges in STI management.

Table 4. Distribution of the participants by professional activities and barriers (n=62)

Name of the variables	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
Provide counseling sessions	64.5%	14.5%	21%	0%	0%
Documentation of counseling sessions	6.45%	14.52%	11.29%	22.58%	45.16%
Request lab work before starting treatment	35.48%	32.26%	19.35%	09.68%	3.23%
Patients attend follow-up appointments	4.84%	22.58%	41.94%	25.81%	4.84%
Patients attend with their spouse for counseling and management	4.8%	11.3%	29%	43.5%	11.3%
Experienced barriers during the treatment of STIs			**Yes**	**No**	
			61.3%(38)	38.7%(24)	

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Figure 1 illustrates that half of the respondents faced barriers related to the lack of privacy in outdoor settings, while 36.8% encountered social taboos impacting healthcare practices. Only 2.6% of the respondents encountered patient non-compliance with prescribed doses and frequencies and while another 2.6% found that patients' partners being unwilling to undergo investigations or treatment, respectively.

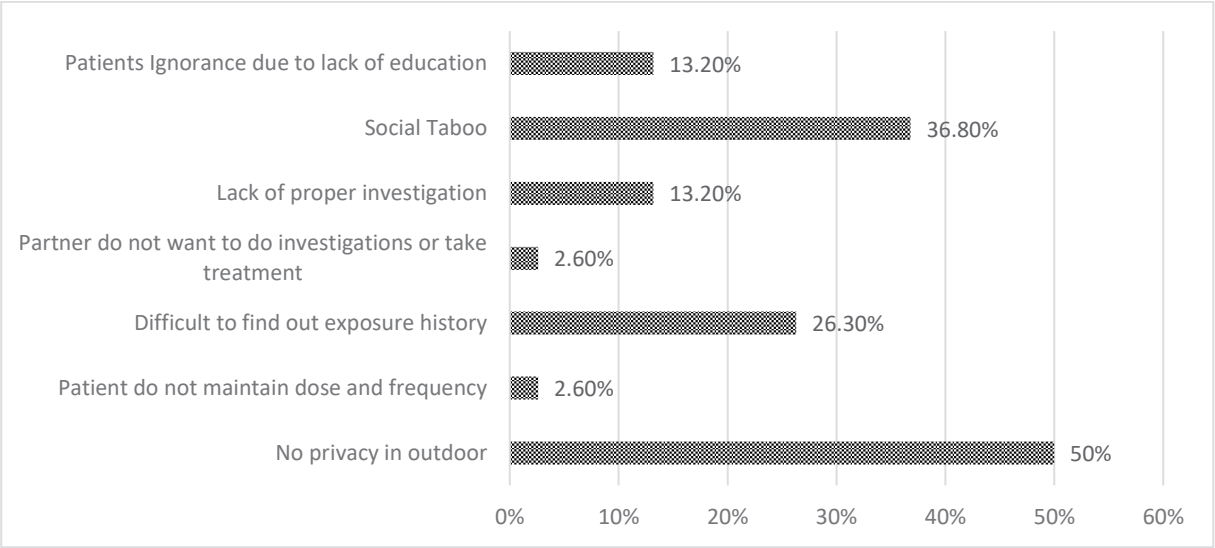

Figure 1. Distribution of the hospitals by services (n=9)

District STD Quality of Care Assessment (DISCA) tool was to assess the service of health care facilities. All of the hospitals offered treatment for STIs from 8 am to 2:30 pm, two-thirds (66.7%) offered treatment after clinic hours, more than half (55.6%) had 1 to 4 adult consultation rooms, 77.8% didn't use adult consultation room for STIs patients, 66.7% had only 1 room for STI care and only 1 hospital provided adequate privacy for examination. Concerning safe examination, 55.6% of hospitals had an available examination couch, while examination lights were notably unavailable in all surveyed hospitals. Additionally, sterile speculums for examinations were not available in any of the facilities. In terms of safe treatment provision, none of the surveyed hospitals had guidelines or patient education materials available for STIs. However, VDRL (Venereal Disease Research Laboratory) tests were widely accessible (88.9%), with varying turn-around times. The majority (44.4%) reported a turn-around time of less than 6 hours. In all the hospitals, a total of 157 VDRL tests were done in the last one month, with the mean of 17.4. The provision of condoms and education on their usage is reported by only 11.1% of the hospitals. All surveyed hospitals (100%) had a referral policy in place. None of the hospitals had a system for partner notification. All surveyed hospitals provide antenatal care (100%) and treat pregnant clients with STIs. However, syphilis screening for pregnant women is conducted by 66.7% of the hospitals. 55.6% of the hospitals had a doctor with training on STIs management and 66.7% had a doctor with HIV/AIDS counselling course working on the day of data collection. Approximately 66.7% of hospitals had a doctor responsible for supervising STD care. Among the listed STIs drugs, Tab. Ciprofloxacin (500mg) was available in 77.8% of hospitals, while Tab. Metronidazole (400mg) and Tab. Doxycycline (100mg) were available in all the hospitals. Tab. Erythromycin (250mg) and Inj. Benzathine Penicillin 2.4MU were not available in any of the surveyed hospitals.

Association between socio-demographic characteristics and Knowledge and practice:

In Table 5, shows Fisher's Exact tests was used to examine associations between respondents' education, years of experience, previous training, and knowledge of various STI treatments. Significant associations were found between educational qualification and knowledge of bacterial vaginosis and genital herpes treatments. Years of experience were associated with knowledge of candidiasis, trichomoniasis, syphilis, and genital herpes treatments. Previous training was linked to knowledge of urethral discharge treatment. Additionally, there was a significant association between educational level and accurate treatment practices.

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Table 5. Knowledge and practices by socio-demographic characteristics of the participants

Associations	Fisher's Exact test value; P value	
Educational qualification and knowledge of urethral discharge (Gonorrhea) treatment	1.911	0.4
Educational qualification and knowledge of vaginal discharge (Bacterial vaginosis) treatment	7.11	0.023
Educational qualification and knowledge of vaginal discharge (candidiasis) treatment	3.382	0.177
Educational qualification and knowledge of vaginal discharge (Trichomoniasis) treatment	4.402	0.097
Educational qualification and knowledge of genital ulcer (Syphilis) treatment	1.770	0.411
Educational qualification and knowledge of genital ulcer (Cancroid) treatment	4.225	0.111
Educational qualification and knowledge of genital ulcer (Genital herpes) treatment	8.783	0.009
Educational qualification and knowledge about pregnancy contraindicated STIs drugs	0.55	1.00
Years of experience and knowledge about Vaginal discharge (Candidiasis) treatment	14.266	0.003
Years of experience and knowledge about Vaginal discharge (Candidiasis) treatment	7.149	0.11
Associations	Fisher's Exact test value; P value	
Years of experience and knowledge about Vaginal discharge (Trichomoniasis) treatment	13.46	0.005
Years of experience and knowledge about Genital ulcer (Syphilis) treatment	9.768	0.033
Years of experience and knowledge about Genital ulcer (Genital herpes) treatment	9.307	0.036
Years of experience and knowledge about pregnancy contraindicated STIs drugs	5.616	0.044
Previous training and knowledge of urethral discharge treatment	4.254	0.109
Previous training and knowledge of genital ulcer (multiple painful) treatment	1.657	0.487
Association between educational level and accurate practice of treatment	7.382	0.007

DISCUSSION

In order to manage patients with STIs, the syndromic approach is frequently employed as a problem-oriented procedure (based on the patient's symptoms) (7). The knowledge and practice of physicians regarding syndromic management of STIs ware evaluated in the current study. While treating STIs requires collaboration amongst nurses, other medical specialists, and administrative staff, physicians were the focus of this study because they serve as case managers for diagnosis, treatment, and counseling.

In this study high knowledge was observed in identifying drugs contraindicated in pregnancy, with 80.6% accuracy. Moderate knowledge levels were noted for Curd-like vaginal discharge (Candidiasis), Frothy greyish-white vaginal discharge (Trichomoniasis) and Painless, single genital ulcer (Syphilis), ranging from 40.3% to 48.4% accuracy. Urethral discharge (Gonorrhea), Muco-purulent vaginal discharge (Bacterial Vaginosis), and Painful, multiple genital ulcer (Cancroid) exhibited lower knowledge levels, with accuracies between 24.2% and 35.5%. Multiple genital ulcer with blisters (Genital Herpes) had 48.4% identifying the drug but only 11.3% providing comprehensive details, indicating varying levels of knowledge across these STI treatments.

Similar study suggested a higher degree of knowledge regarding the accurate prescription details for urethral discharge and vaginal discharge syndromes; however, a lower level of knowledge was noted for genital ulcers and vaginal discharge syndromes in pregnant women. There may be a variation in the prevalence rate of these syndromes, which would explain the differences in knowledge and provide more experience in appropriately managing these symptoms (15)

Earlier studies that evaluated general practitioners' knowledge in Pakistan and Namibia; in those studies, the knowledge of the recommended treatment regimen was 55% and 56%, respectively (12,16).

Although 59.7% of physicians were aware of the guidelines for the syndromic management of STIs, clinically, the current study showed that the majority of physicians 97.1% correctly prescribed the drug concerning the STIs' syndrome for their patients in the last 10 days.

In a study from Saudi Arabia majority of physicians (76%) correctly prescribed the medication concerning the STIs' syndrome for their patients in the last 10 days, despite the fact that only 30% of physicians were aware of the guidelines for the syndromic management of STIs. (15)

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These results are consistent with those of earlier research (11,12), which explained this finding by showing that most doctors treated STI cases according to their clinical flowchart. However, our result is higher than the results in these studies (12,17).
The comprehensive approach of treating the case, offering clinical counseling, and treating partners to stop STIs from spreading further is known as syndromic management of STIs. Behavioral counseling assists in raising awareness and directing patients toward safer sexual behavior (18).

The most significant and clinically relevant finding was that more than half of the doctors offer health counseling to patients who had been diagnosed with sexually transmitted infections. Nonetheless, because high-intensity behavioral counseling interventions effectively reduce future STI acquisition by 30%, the United States Preventive Services Task Force (USPSTF) recommends such interventions for patients at increased risk. (18,19).
Given the social and cultural context, STIs are touchy subjects, and in Bangladeshi society, people who have been diagnosed with them are usually stigmatized (20,21). All of that prevents patients from getting treatment, postpones treatment, and hinders partners' ability to receive effective care. The results of the current study were anticipated and revealed that one third of doctors' patients had poor follow-up appointment adherence, and half of them had missed the follow-up appointment for treatment and counseling with their spouses. These results may clarify that, in addition to treatment recommendations, primary care physicians need to receive cultural competence training regarding sensitive diseases like STIs and the financial benefits of offering clinical counseling.

Healthcare facilities assessed using the DISCA tool indicated limited privacy for STI patients, insufficient examination equipment, and a lack of educational resources. While VDRL tests were prevalent, other services like partner notification and comprehensive STI guidelines were lacking. Availability of essential drugs varied, emphasizing the need for improvements in facilities and training for healthcare providers in managing sexually transmitted infections.

Moreover, the results of this study are not more broadly applicable because it solely looked at only one district. Studies based nationally might be useful in gathering a larger sample size to support the study's power. Despite these limitations, our study addresses the knowledge and practice of physicians regarding syndromic management of STIs in primary and secondary health care facilities in Noakhali, Bangladesh.

CONCLUSION

Syndromic management for sexually transmitted infections (STIs) is to effectively address and reduce their impact. The study reveals that healthcare professionals in that area show varying levels of knowledge and practices in managing STIs. While they excel in prescribing medicines there is still a gap in the awareness level regarding national guidelines of syndromic approaches for STIs as well as inconsistencies in documentation and follow-up procedures. Factors like the type of medical training and specialties of doctors also influence how they handle STIs. Challenges such as privacy concerns and societal taboos highlight the need for targeted interventions and continuous education to enhance STI management practices and address existing barriers.

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